

Listing of Claims

This listing of claims replaces all prior versions, and listings, of claims in the application:

1. (Withdrawn) A method comprising:
patterning a substrate with a substantially arbitrary arrangement of features by introducing irregularity into a repeating array of features.
2. (Withdrawn) The method of claim 1, wherein introducing irregularity comprises forming an arbitrary figure above some of the features in the repeating array.
3. (Withdrawn) The method of claim 2, wherein patterning the substrate further comprises etching a substrate through portions of the repeating array not covered by the arbitrary figure.
4. (Withdrawn) The method of claim 1, wherein introducing irregularity comprises introducing irregularity into the repetition of features resulting from an interference pattern.
5. (Withdrawn) The method of claim 4, wherein introducing irregularity comprises introducing irregularity into the repetition of the interference pattern formed by interference lithography.

6. (Withdrawn) The method of claim 4, wherein introducing irregularity comprises introducing irregularity into the repetition of the interference pattern formed by projection lithography.

7. (Withdrawn) The method of claim 1, wherein introducing irregularity comprises introducing irregularity into the repetition of a two-dimensional array of contacts.

8. (Withdrawn) The method of claim 1, wherein patterning the substrate further comprises etching the substrate using the substantially arbitrary arrangement to direct the etching.

9. (Withdrawn) The method of claim 1, wherein patterning the substrate further comprises patterning the substrate with the substantially arbitrary arrangement having a pitch approaching one half the wavelength of a patterning electromagnetic radiation.

10. (Currently Amended) A device, comprising:
a substantially arbitrary arrangement of ~~features~~
contacts, the ~~features~~ contacts having defined with a definition
characteristic of interference lithography, wherein the contacts
have been defined by exposing a resist using interference
lithography and etching the contacts using the resist as a
guide.

11. (Currently Amended) The device of claim 10, wherein the substantially arbitrary arrangement of ~~features~~ contacts comprises ~~features~~ contacts printed with a pitch approaching one half the wavelength of a patterning electromagnetic radiation.

12. (Currently Amended) The device of claim 10, wherein the substantially arbitrary arrangement of ~~features~~ contacts comprises ~~features~~ contacts free from defects arising due to one or more of lens imperfections and mask imperfections.

13. (Currently Amended) The device of claim 10, wherein the substantially arbitrary arrangement of ~~features~~ contacts comprises ~~features~~ contacts free from defects arising due to backscatter of electrons.

14. (Currently Amended) The device of claim 10, wherein the substantially arbitrary arrangement of ~~features~~ contacts comprises a portion of a microelectronic device.

15. (Original) The device of claim 14, wherein the portion of the microelectronic device comprises a portion of an SRAM memory device.

16. (Withdrawn) A system comprising:
a data processor;
an SRAM in data communication with the data processor,
the SRAM including a substantially arbitrary arrangement of

features, the features including definition characteristic of interference lithography.

17. (Withdrawn) The system of claim 16, wherein the SRAM comprises a substantially arbitrary arrangement of contacts including definition characteristic of interference lithography.

18. (Withdrawn) A method comprising:
interfering electromagnetic radiation to illuminate a substrate with an interference pattern, the interference pattern imparting the substrate with repeating first features; and
introducing irregularity into the repetition of the interference pattern to impart a substantially arbitrary feature arrangement to the substrate.

19. (Withdrawn) The method of claim 18, wherein introducing irregularity comprises forming a substantially arbitrary figure above some portion of the interference pattern.

20. (Withdrawn) The method of claim 19, further comprises patterning the substrate using the substantially arbitrary figure to define the substantially arbitrary feature arrangement.

21. (Withdrawn) The method of claim 18, wherein interfering electromagnetic radiation comprises imparting, to

the substrate, first features having a pitch approaching one half the wavelength of a patterning electromagnetic radiation.

22. (Withdrawn) The method of claim 18, wherein interfering electromagnetic radiation comprises using interference lithography to illuminate the substrate with the interference pattern.

23. (Withdrawn) A method comprising:
patterning a substrate using a first lithographic technique, the patterning providing first features with a first pitch approaching one half the wavelength of a patterning electromagnetic radiation; and
eliminating the impact of at least some of the first features on the substrate using a second lithographic technique providing second features with a second pitch, the second pitch being two or more times larger than the first pitch.

24. (Withdrawn) The method of claim 23, wherein patterning the substrate using the first lithographic technique comprises patterning the substrate using interference lithography.

25. (Withdrawn) The method of claim 24, wherein patterning the substrate using interference lithography

comprises exposing the substrate with a pair of interference patterns.

26. (Withdrawn) The method of claim 25, wherein exposing the substrate comprises exposing the substrate with a substantially identical pair of interference patterns.

27. (Withdrawn) The method of claim 25, wherein exposing the substrate comprises exposing the substrate with the pair of interference patterns simultaneously.

28. (Withdrawn) The method of claim 23, wherein eliminating the impact of at least some of the first features on the substrate comprises patterning using a binary mask.

29. (Withdrawn) The method of claim 23, wherein eliminating the impact of at least some of the first features on the substrate comprises printing an arbitrary figure above some of the first features.

30. (Withdrawn) The method of claim 29, wherein eliminating the impact of at least some of the first features on the substrate further comprises etching a portion of the substrate through the first features not covered by the arbitrary figure.

31. (Withdrawn) An apparatus comprising:

an interference exposure module to produce a first exposure resulting in an array of repeating contacts in a photosensitive media; and

a second patterning module to reduce regularity of the features in the array.

32. (Withdrawn) The apparatus of claim 31, wherein the interference exposure module comprises:

a pyramidal beam splitter to split an electromagnetic radiation four ways; and

two sets of opposing pairs of mirrors disposed to create an interference pattern by reflecting the split electromagnetic radiation.

33. (New) The device of claim 10, wherein the contacts have been formed by exposing a resist to two substantially orthogonal interference patterns and etching the contacts using the resist as a guide.

34. (New) The device of claim 33, wherein the contacts have been formed by exposing the resist to two substantially orthogonal interference patterns formed using laser beams.

35. (New) The device of claim 33, wherein the contacts have a same pitch in the directions of the substantially orthogonal interference patterns.

36. (New) The device of claim 10, wherein the contacts have been formed by exposing a resist to an interference pattern of electromagnetic radiation, rotating the resist relative to the interference pattern, exposing the rotated resist to the interference pattern, and etching the contacts using the resist as a guide.